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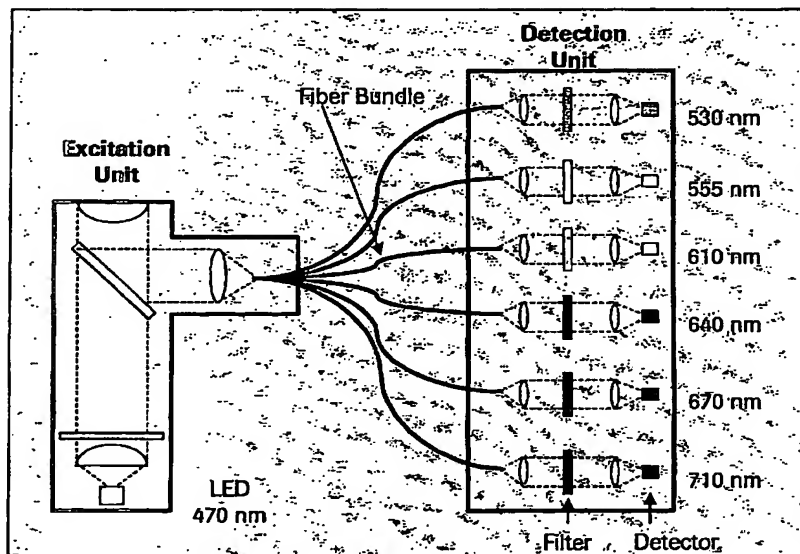
[DE/DE]; Meichelbeckstrasse 16, 82377 Penzberg (DE). **BECHLER, Ingrid** [DE/DE]; Wolfpratshauser Strasse 34 a, 82538 Gelting (DE). **BOLTE, Joachim** [DE/DE]; Martin-Luther Strasse 2c, 68642 Buerstadt (DE). **HEINDL, Dieter** [DE/DE]; Sternstrasse 4, 82396 Paehl (DE). **JOSEL, Hans-Peter** [DE/DE]; Ulmenstrasse 28, 82362 Weilheim (DE). **GUTEKUNST, Martin** [DE/DE]; Escherstrasse 12, 82390 Eberfing (DE). **SEIBL, Rudolf** [DE/DE]; Kapellenwiese 29, 82377 Penzberg (DE). **MUELLER, Christoph** [DE/DE]; Ambacher Strasse 19, 81476 Muenchen (DE).

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[Continued on next page]

(54) Title: **IMPROVED SYSTEM FOR MULTI COLOR REAL TIME PCR**



(57) Abstract: The invention is directed to a system for performing multi-color real time PCT, comprising a flexible real time PCT instrument and a specific composition or reaction mixture for performing multiplex PCR: In particular, the present invention is directed to a composition or reaction mixture which comprises at least 3, preferably 4-5 and most preferably exactly 4 pairs of FRET hybridization probes. Each pair of said hybridization probes consists of a FRET donor probe carrying a FRET donor moiety and a FRET acceptor probe carrying a FRET acceptor moiety having an emission maximum between 550 and 710 nm.

WO 2004/087950 A3



- (84) **Designated States** (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### Declarations under Rule 4.17:

- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
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SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

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A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 C12Q1/68

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, CHEM ABS Data, EMBASE, WPI Data

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages   | Relevant to claim No.             |
|------------|--|-----------------------------------|
| X<br>Y     | US 6 150 107 A (MATHIES RICHARD A ET AL)<br>21 November 2000 (2000-11-21)<br><br>abstract<br>column 2, line 1 - column 2, line 28<br>examples 1-5<br>claims 1-28<br>figures 1-8<br><br>-----<br>-/-- | 1-9, 13,<br>14<br>10-12,<br>15-17 |

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

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| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |   |   |
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| Category *   | Citation of document, with indication, where appropriate, of the relevant passages  | Relevant to claim No.                                     |
| X<br>Y   | US 6 177 247 B1 (JU JINGYUE ET AL)<br>23 January 2001 (2001-01-23)<br><br>abstract<br>column 2, line 11 - column 2, line 34<br>column 3, line 46 - column 4, line 16<br>column 5, line 32 - column 5, line 45<br>column 6, line 13 - column 6, line 22<br>column 7, line 18 - column 7, line 21<br>example 1<br>claims 1-45   | 1-9, 13,<br>14<br>10-12,<br>15-17                         |
| X<br>Y   | US 5 869 255 A (JU JINGYUE ET AL)<br>9 February 1999 (1999-02-09)<br><br>abstract<br>claims 1-20<br>figures 1,3   | 1-9, 13,<br>14<br>10-12,<br>15-17                         |
| X<br><br>Y   | VET J A M ET AL: "Multiplex detection of<br>four pathogenic retroviruses using<br>molecular beacons"<br>PROCEEDINGS OF THE NATIONAL ACADEMY OF<br>SCIENCES OF USA, NATIONAL ACADEMY OF<br>SCIENCE. WASHINGTON, US,<br>vol. 96, 1999, pages 6394-6399,<br>XP002145609<br>ISSN: 0027-8424                                       | 1-9, 13,<br>14<br><br><br><br><br><br><br>10-12,<br>15-17 |
| X<br><br>Y   | JU J ET AL: "DESIGN AND SYNTHESIS OF<br>FLUORESCENCE ENERGY TRANSFER DYE-LABELED<br>PRIMERS AND THEIR APPLICATION FOR DNA<br>SEQUENCING AND ANALYSIS"<br>ANALYTICAL BIOCHEMISTRY, ACADEMIC PRESS,<br>SAN DIEGO, CA, US,<br>vol. 231, no. 1,<br>10 October 1995 (1995-10-10), pages<br>131-140, XP000536518<br>ISSN: 0003-2697 | 1-9, 13,<br>14<br><br><br><br><br><br><br>10-12,<br>15-17 |
|  | abstract<br>figures 1,3   |   |

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# INTERNATIONAL SEARCH REPORT

International Application No  
PCT/EP2004/003457

| C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT |  |                       |
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| A  | MATTHEWS J A ET AL: "ANALYTICAL<br>STRATEGIES FOR THE USE OF DNA PROBES"<br>ANALYTICAL BIOCHEMISTRY, ACADEMIC PRESS,<br>NEW YORK, NY, US,<br>vol. 169, no. 1,<br>15 February 1988 (1988-02-15), pages 1-25,<br>XP000670180<br>ISSN: 0003-2697<br>the whole document            | 1-17                  |

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# INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/003457

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/EP2004/003457

## Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:
  - a. type of material
    - ☒ a sequence listing
    - ☐ table(s) related to the sequence listing
  - b. format of material
    - ☒ in written format
    - ☒ in computer readable form
  - c. time of filing/furnishing
    - ☒ contained in the international application as filed
    - ☒ filed together with the international application in computer readable form
    - ☐ furnished subsequently to this Authority for the purpose of search
2. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
3. Additional comments:

## INTERNATIONAL SEARCH REPORT

International Application No

PCT/EP2004/003457

| Patent document<br>cited in search report |    | Publication<br>date | Patent family<br>member(s) | Publication<br>date |
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